

JUN 03 2005

Attorney Docket No.: A-6756 (IP 10094/6007)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Wadood Hamad et al.

Group Art Unit: 1774

Serial No.: 09/522,359

Examiner: L. Ferguson

For: Engineered Crack Resistant Paper And Board

Filed: March 9, 2000

CERTIFICATE OF FACSIMILE

Mail Stop Appeal Brief - Patents
Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

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1. Transmittal Form, PTO/SB/21, 1 sheet(s);
2. Notice of Brief on Appeal and Notification of Non-Compliance, 1 sheet(s);
3. Appeal Brief, 10 sheet(s) in triplicate;
4. Amendment Under Rule 116, 5 sheet(s);
5. Amendment Fee Transmittal, 1 sheet(s);
6. Petition for Extension of Time, 1 sheet(s).


Michele L. WolferRECEIVED
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TRANSMITTAL
FORM

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Total Number of Pages in This Submission

Application Number	09/522,359
Filing Date	March 9, 2000
First Named Inventor	Wadood Hamad et al.
Art Unit	1774
Examiner Name	L. Ferguson
Attorney Docket Number	A-6756 (IP 10094/6007)

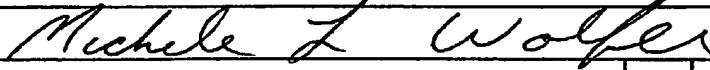
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Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	International Paper Company		
Signature			
Printed name	Richard C. Stewart II		
Date	06/03/2005	Reg. No.	28,047

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature			
Typed or printed name	Michele L. Wolfer	Date	06/03/2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: Wadood Hamad et al.

Serial No.: 09/522,359

Group Art Unit: 1774

For: Engineered Crack Resistant Paper And Board

Filed: March 9, 2000

Examiner

L. Ferguson

Mail Stop Appeal Brief-Patents
Commissioner for Patents and Trademarks
PO Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the "Notification of Non-Compliance" mailed January 5, 2005, enclosed in triplicate is a Brief on Appeal, including three copies of the claims as they currently appear in this case, in connection with the above-identified application.

The fee for filing this Brief on Appeal of \$330.00 was paid when the original brief was filed. No further fees are due or payable.

Respectfully submitted,



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Date: June 1, 2005

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Attorney Doc. No.: A-6756 (10094/6007)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICEIn re the application of: **WADOOD HAMAD et al**Group Art Unit: **1774**Serial No.: **09/522,359**Examiner: **L. Ferguson**Filed: **March 9, 2000**For: **ENGINEERED CRACK RESISTANT PAPER AND BOARD****APPEAL BRIEF**

Mail Stop Appeal Brief-Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

This appeal brief is filed in response to the final rejection of claims 1 to 4, 6 and 8 dated October 22, 2003 and the Advisory Action dated May 3, 2004.

REAL PARTY IN INTEREST

The real party in interest is International Paper Company, the assignor of the above-referenced patent application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 to 4, 6 and 8 have been finally rejected and are under appeal. The appealed claims are attached as Appendix A. Claims 9 to 17 were withdrawn from

consideration as directed to the invention of Examiner's Group II and were canceled by Appellants. Objected to claims 5 and 7 were canceled and were refiled in independent format as claims 18 and 19, respectively, which Examiner has allowed.

STATUS OF AMENDMENTS

An amendment under 37 C.F.R. §1.116 was filed March 9, 2004 in response to the Final Rejection. The amendment cancelled dependent claims 5 and 7 and added new independent claims 18 and 19 that are commensurate in scope to cancelled claims 5 and 7, respectively. In an Advisory Action dated March 23, 2004, Examiner indicated that the Amendment was entered and that new Claims 18 and 19 were allowable. Examiner noted a minor typographical error in claim 18 that was corrected in a new Rule 116 Amendment filed on even date herewith. Appellants have not been informed of the status of this amendment.

SUMMARY OF THE INVENTION

The present invention is directed to a crack-resistant paper or board comprising a cellulose fiber network web impregnated with a polymer. The polymer is impregnated into the web in geometrical formations. (See claim 1 and claims that depend there from.) Especially good results are unexpectedly obtained when the polymer is impregnated into the web in thin rectangular stiper, equi-distant circles or diamond-shape formations as claimed in claim 3. Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control.

ISSUES

A. Whether Claims 1, 3 and 4 are Unpatentable Under 35USC§103 (a) Over USP 5,470,434 ("Terasawa, et. al").

B. Whether Claims 2, 6 and 8 are Unpatentable Under 35USC§103 (a) Over Terasawa, Et. Al In View Of USP 4,596,635 ("Warszawski").

GROUPING OF CLAIMS

Appealed claims do not stand or fall together as will be more apparent from the Arguments set forth below with respect to claim 3.

ARGUMENT

1. THE REJECTION OF CLAIMS UNDER 35USC§103 (A) AS BEING UNPATENTABLE OVER USP 5,470,434 ("TERASAWA, ET. AL")

Claims 1, 3 and 4 are rejected under 35USC§103 (a) as being unpatentable over Terasawa, et. al". This rejection is inappropriate and should be reversed.

For an invention to be prima facie obvious, the court has indicated that the prior art must provide sufficient motivation for one of ordinary skill in the art to modify the prior art structure with a reasonable expectation that the invention as claimed would result. (See In re Lintner, 173 USPQ 560, In re Stemniski, 444 F.2d 581, 170 USPQ 343 and In re Lee, 277 F.3d 1338, 61 USPQ 2d 1430.) The linch pin of the analysis is motivation with a reasonable expectation of success. There is no prima facie obviousness where the prior art itself provides no apparent basis for concluding that a person of ordinary skill in the art would be motivated to modify the prior art structure so as to arrive at the claimed structure with a reasonable expectation of success in achieving the advantages of the claimed apparatus. The requisite motivation is clearly not present in this case.

The present invention is directed to a crack-resistant paper or board comprising a cellulose fiber network web impregnated with a polymer. The polymer is impregnated into the web in geometrical formations as for example thin rectangular stiper, equidistant circles or diamond-shape formations. (See claims 1 and 3). Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the

application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control. This invention and the advantages attendant there to are not taught or suggested by the cited references.

Terasawa, et. al discloses a decay resistant paper partly containing decayable portions. Treating the paper with an N-substituted derivative of urea over the entire surface of the paper makes the paper. The derivative is known to react with hydroxyl groups in cellulose by heating in the presence of a catalyst to form cross-links between the hydroxyl groups or methylol groups. This cross-linking hinders the groups and removes their hydrophilic character which renders the cross-linked areas resistant to action of soil microorganism (decay resistance) (See Col 3, lines 4 to 13 of Terasawa et. al.) By heating the treated paper in certain areas at a temperature sufficiently high to initiate cross-linking and in other areas at a temperature below the cross-linking initiation temperature, a paper is produced having decay resistant areas and decayable areas.

There are several basic differences between the claimed invention and the teachings of Terasawa, et. al. The primary difference is that this reference contains absolutely no teaching or suggestion of a paper or board formed from a cellulose fiber network web impregnated with a polymer material in geometrical patterns. In the absence of such a teaching or suggestion there is absolutely no motivation for one of ordinary skill in the art to make the claimed material.

In support of the rejection Examiner states:

"Terasawa disclosed decay-resistant impregnated paper cellulose made of fiber (abstract and column 2, lines 15-25) having discontinuous circular geometrical formations displayed in Figures 1 and 4 and column 12, lines 51-67, where the paper is impregnated with an antic decaying agent consisting of polymeric fiber (column 6, line 44 through column 7, line 30). Terasawa discloses 5% weight of the polymer fiber (column 9, lines 21-25). Terasawa does not disclose the

polymer is thin. Thinness is an optimizable feature, which directly affects the integrity of the paper. It would have been obvious to one of ordinary skill in the art to optimize the polymer because discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 and see *in re Allen*, 15 USPQ 233."

Examiner misconstrues the teaching at Column 6, line 44 and Column 7, line 30 of Terasawa. In the preceding portion at Column 6, line 15 to Column 6 line 41, Terasawa et, al. clearly teaches that the "polymer fiber" is a part of the paper. For example, at Column 6, line 15 to Column 6, line 17, Terasawa, et. al. states:

"In addition, a paper made from a fiber blend composed of a natural fiber and a synthetic fiber can also be made decay resistant by the process of their invention", (emphasis added)

It is also significant to note that the synthetic polymer fiber component of the paper exist as a blend with the natural fiber. In the American Heritage Dictionary, 3rd edition, at page 148, a blend is defined as "To combine or mix so that the consistent parts are indistinguishable from one another...to form a uniform mixture" (emphasis added). This clearly differs from the present invention in which the polymer is impregnated in geometrical patterns. In fact, it appears to be exactly the opposite.

Especially good results are unexpectedly obtained when the polymer is impregnated into the web in thin rectangular stripes, equi-distant circles or diamond-shape formations as claimed in claim 3. Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control. There is no art of record which teaches or suggests that superior results are provided by the use of circular or rectangular patterns. Assuming, arguendo, that Examiner has established a case of *prima facie* obviousness with respect to the appealed claims, such case has clearly been rebutted

with respect to claim 3 by the experimental showing of unexpected superior properties exhibited by the circular and rectangular patterns.

In the Advisory Action Examiner states:

"Applicant argues the cited references do not teach the advantages of having a circular or rectangular geometric pattern. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having a superior durability in the MD direction and improved fracture toughness in the CD direction) are not recited in the rejected claim(s)."

Examiner has misconstrued Appellants position. While the data in the examples of the application show that the invention provides one or more advantages, Appellant's primary position is that Terasawa does not teach or suggest a paper or board formed from a cellulose fiber network web impregnated with a polymer material in geometrical patterns.

In the Advisory Action Examiner also states:

"Applicant argues Terasawa does not teach a paper or board formed from a cellulose fiber network we impregnated with polymer material in geometrical pattern. Examiner respectfully disagrees because Terasawa discloses impregnated paper cellulose made of fiber (abstract and column 2, lines 15-25) having discontinuous circular geometrical formations as shown in Figures 1 and 4 and column 12, lines 51-67, where the paper is impregnated with a polymeric fiber (column 6, line 44 through column 7, line 30)."

The "discontinuous circular geometrical formations" referred to by Examiner are NOT formed of polymer materials impregnated in the paper as in the claimed invention but rather are areas in which the paper cellulose has been cross-linked by treatment with a N-substituted urea derivative. The polymer fibers referred to by Examiner are dispersed and blended with the cellulosic fibers forming a part of the paper itself and are not localized in discrete geometrical patterns.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. It is well settled law that hindsight and obvious-to-try are not the standards of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references with a reasonable expectation that the invention, as a whole, will result. Employing this standard, it is clear that the rejection under 35USC§103 is inappropriate. (See In re Antonie, 559 F2d 618, 195 USPQ 6 and In re Tomlinson et.al., 363 F2d 928, 150 USPQ 623.)

2. THE REJECTION OF CLAIMS UNDER 35USC§103 (A) AS BEING UNPATENTABLE OVER TERASAWA, ET. AL IN VIEW OF WARSZAWSKI

Claims 2, 6 and 8 are rejected under 35USC§103 (a) as being unpatentable over Terasawa, et. al in view of USP 4,596,635 ("Warszawski"). This rejection is inappropriate and should be reversed.

The deficiencies of Terasawa, et. al is noted above. Warszawski, the secondary reference, does not obviate these deficiencies. It is well settled law that references can be combined to frame a Section 103 rejection, but they cannot be combined indiscriminately. In re Mercier, 515 F2d 1161, 184 USPQ (C.C.P.A. 1982). As the Court stated in re Stemniski, 444 F2d 581, 170 USPQ 343 (C.C.P.A. 1971):

"there must be some logical reason apparent from positive, concrete evidence of record which justifies a combination of primary and secondary references and subsequent conclusion of obviousness."

No such "logical reason" has been presented by Examiner nor is any set forth in the references themselves. There is no teaching or suggestion in any cited reference, which would motivate one of ordinary skill in the art to pick and choose bits and pieces from Terasawa, et. al. and combine them with bits and pieces from Warszawski to hypothetically create the claimed invention.

Even if there was motivation to combine these references, the resulting combination does not form the claimed invention on that there is no teaching or suggestion on either reference of a geometric pattern. As discussed above, Terasawa, et. al clearly does not provide such a teaching. Warszawski also does not provide such a teaching or suggestion and is not relied by Examiner as doing so.

Lastly, Warszawski is clearly related to non-analogous art. The two criteria for determining whether prior art is analogous are: (1) whether the reference is from the same field of endeavor regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference is still reasonably pertinent to the particular problem which the inventor is involved. In Clay, 966 F2d 656, 23 USPQ 2d 1058 (Fed. Cir. 1992). Warszawski clearly does not relate the same field as that of the present invention or for that matter, the field of Terasawa et. al. Note that Warszawski relates to the field of electro sensitive media and recording processes, while the present invention relates to the field of engineered crack resistant paper and board. These fields of endeavor are clearly different. Nor is Warszawski reasonably pertinent to the problem solved by the present invention, i.e. crack resistant paper and board.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. Hindsight and obvious-to-try are not the standard of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references and not obvious to try. In re Antonie, 559 F2d 618, 195 USPQ 6 (C.C.P.A. 1977) and In re Tomlinson et. al., 363 F2d 928, 150 USPQ 623 (C.C.P.A. 1966).

In view of the foregoing, Appellants respectfully request that the Board reverse the Final rejection.

Respectfully Submitted,
WADOOD HAMAD, ET. AL.

Date: June 1, 2005

By Richard C. Stewart, II

Richard C. Stewart, II
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Fax: (513) 248- 6455
e-mail: rich.stewart@ipaper.com

Appendix A

1. A crack-resistant paper or board comprising a cellulose fiber network web; and a thin discontinuous polymer material impregnated into the web in geometrical formations.
2. The crack-resistant paper or board as claimed in claim 1, wherein the thin discontinuous polymer material is a thermoplastic or thermoset material.
3. The crack-resistant paper or board as claimed in claim 1, wherein the geometrical formations are thin rectangular stripes, equi-distant circles or diamond-shape formations.
4. The crack-resistant paper or board as claimed in claim 1, wherein the polymer is approximately 5%-20% a basis weight of the paper or board.
- 6 The crack-resistant paper or board as claimed in claim 1, wherein the polymer is selected from the group consisting of a latex blend, an acrylic polymer, a polyester resin and a liquid crystalline polymer.
8. The crack-resistant paper or board as claimed in claim 1, wherein the paper or board has a polymer material coated on a surface of the paper or board.

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There are several basic differences between the claimed invention and the teachings of Terasawa, et. al. The primary difference is that this reference contains absolutely no teaching or suggestion of a paper or board formed from a cellulose fiber network web impregnated with a polymer material in geometrical patterns. In the absence of such a teaching or suggestion there is absolutely no motivation for one of ordinary skill in the art to make the claimed material.

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The "discontinuous circular geometrical formations" referred to by Examiner are NOT formed of polymer materials impregnated in the paper as in the claimed invention but rather are areas in which the paper cellulose has been cross-linked by treatment with a N-substituted urea derivative. The polymer fibers referred to by Examiner are dispersed and blended with the cellulosic fibers forming a part of the paper itself and are not localized in discrete geometrical patterns.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. It is well settled law that hindsight and obvious-to-try are not the standards of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references with a reasonable expectation that the invention, as a whole, will result. Employing this standard, it is clear that the rejection under 35USC§103 is inappropriate. (See In re Antonie, 559 F2d 618, 195 USPQ 6 and In re Tomlinson et.al., 363 F2d 928, 150 USPQ 623.)

2. THE REJECTION OF CLAIMS UNDER 35USC§103 (A) AS BEING UNPATENTABLE OVER TERASAWA, ET. AL IN VIEW OF WARSZAWSKI

Claims 2, 6 and 8 are rejected under 35USC§103 (a) as being unpatentable over Terasawa, et. al in view of USP 4,596,635 ("Warszawski"). This rejection is inappropriate and should be reversed.

The deficiencies of Terasawa, et. al is noted above. Warszawski, the secondary reference, does not obviate these deficiencies. It is well settled law that references can be combined to frame a Section 103 rejection, but they cannot be combined indiscriminately. In re Mercier, 515 F2d 1161, 184 USPQ (C.C.P.A. 1982). As the Court stated In re Stemniski, 444 F2d 581, 170 USPQ 343 (C.C.P.A. 1971):

"there must be some logical reason apparent from positive, concrete evidence of record which justifies a combination of primary and secondary references and subsequent conclusion of obviousness."

No such "logical reason" has been presented by Examiner nor is any set forth in the references themselves. There is no teaching or suggestion in any cited reference, which would motivate one of ordinary skill in the art to pick and choose bits and pieces from Terasawa, et. al. and combine them with bits and pieces from Warszawski to hypothetically create the claimed invention.

Even if there was motivation to combine these references, the resulting combination does not form the claimed invention on that there is no teaching or suggestion on either reference of a geometric pattern. As discussed above, Terasawa, et. al clearly does not provide such a teaching. Warszawski also does not provide such a teaching or suggestion and is not relied by Examiner as doing so.

Lastly, Warszawski is clearly related to non-analogous art. The two criteria for determining whether prior art is analogous are: (1) whether the reference is from the same field of endeavor regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference is still reasonably pertinent to the particular problem which the inventor is involved. In Clay, 966 F2d 656, 23 USPQ 2d 1058 (Fed. Cir. 1992). Warszawski clearly does not relate the same field as that of the present invention or for that matter, the field of Terasawa et. al. Note that Warszawski relates to the field of electro sensitive media and recording processes, while the present invention relates to the field of engineered crack resistant paper and board. These fields of endeavor are clearly different. Nor is Warszawski reasonably pertinent to the problem solved by the present invention, i.e. crack resistant paper and board.

This rejection is clearly predicated on an obvious-to-try and hindsight reliance of teaching of applicants' application. Hindsight and obvious-to-try are not the standard of review. The courts have clearly held that the appropriate standard is obvious to do based on reasonable motivation from the references and not obvious to try. In re Antonie, 559 F2d 618, 195 USPQ 6 (C.C.P.A. 1977) and In re Tomlinson et. al., 363 F2d 928, 150 USPQ 623 (C.C.P.A. 1966).

In view of the foregoing, Appellants respectfully request that the Board reverse the Final rejection.

Respectfully Submitted,
WADOOD HAMAD, ET. AL.

Date: June 1, 2005

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Appendix A

1. A crack-resistant paper or board comprising a cellulose fiber network web; and a thin discontinuous polymer material impregnated into the web in geometrical formations.
2. The crack-resistant paper or board as claimed in claim 1, wherein the thin discontinuous polymer material is a thermoplastic or thermoset material.
3. The crack-resistant paper or board as claimed in claim 1, wherein the geometrical formations are thin rectangular stripes, equi-distant circles or diamond-shape formations.
4. The crack-resistant paper or board as claimed in claim 1, wherein the polymer is approximately 5%-20% a basis weight of the paper or board.
- 6 The crack-resistant paper or board as claimed in claim 1, wherein the polymer is selected from the group consisting of a latex blend, an acrylic polymer, a polyester resin and a liquid crystalline polymer.
8. The crack-resistant paper or board as claimed in claim 1, wherein the paper or board has a polymer material coated on a surface of the paper or board.

Attorney Doc. No.: A-6756 (10094/6007)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: **WADOOD HAMAD et al**

Group Art Unit: **1774**

Serial No.: **09/522,359**

Examiner: **L. Ferguson**

Filed: **March 9, 2000**

For: **ENGINEERED CRACK RESISTANT PAPER AND BOARD**

APPEAL BRIEF

Mail Stop Appeal Brief-Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

This appeal brief is filed in response to the final rejection of claims 1 to 4, 6 and 8 dated October 22, 2003 and the Advisory Action dated May 3, 2004.

REAL PARTY IN INTEREST

The real party in interest is International Paper Company, the assignor of the above-referenced patent application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1 to 4, 6 and 8 have been finally rejected and are under appeal. The appealed claims are attached as Appendix A. Claims 9 to 17 were withdrawn from

consideration as directed to the invention of Examiner's Group II and were canceled by Appellants. Objected to claims 5 and 7 were canceled and were refiled in independent format as claims 18 and 19, respectively, which Examiner has allowed.

STATUS OF AMENDMENTS

An amendment under 37 C.F.R. §1.116 was filed March 9, 2004 in response to the Final Rejection. The amendment cancelled dependent claims 5 and 7 and added new independent claims 18 and 19 that are commensurate in scope to cancelled claims 5 and 7, respectively. In an Advisory Action dated March 23, 2004, Examiner indicated that the Amendment was entered and that new Claims 18 and 19 were allowable. Examiner noted a minor typographical error in claim 18 that was corrected in a new Rule 116 Amendment filed on even date herewith. Appellants have not been informed of the status of this amendment.

SUMMARY OF THE INVENTION

The present invention is directed to a crack-resistant paper or board comprising a cellulose fiber network web impregnated with a polymer. The polymer is impregnated into the web in geometrical formations. (See claim 1 and claims that depend there from.) Especially good results are unexpectedly obtained when the polymer is impregnated into the web in thin rectangular striper, equi-distant circles or diamond-shape formations as claimed in claim 3. Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control.

ISSUES

A. Whether Claims 1, 3 and 4 are Unpatentable Under 35USC§103 (a) Over USP 5,470,434 ("Terasawa, et. al").

B. Whether Claims 2, 6 and 8 are Unpatentable Under 35USC§103 (a) Over Terasawa, Et. Al In View Of USP 4,596,635 ("Warszawski").

GROUPING OF CLAIMS

Appealed claims do not stand or fall together as will be more apparent from the Arguments set forth below with respect to claim 3.

ARGUMENT

1. THE REJECTION OF CLAIMS UNDER 35USC§103 (A) AS BEING UNPATENTABLE OVER USP 5,470,434 ("TERASAWA, ET. AL")

Claims 1, 3 and 4 are rejected under 35USC§103 (a) as being unpatentable over Terasawa, et. al". This rejection is inappropriate and should be reversed.

For an invention to be prima facie obvious, the court has indicated that the prior art must provide sufficient motivation for one of ordinary skill in the art to modify the prior art structure with a reasonable expectation that the invention as claimed would result. (See In re Lintner, 173 USPQ 560, In re Stemniski, 444 F.2d 581, 170 USPQ 343 and In re Lee, 277 F.3d 1338, 61 USPQ 2d 1430.) The linch pin of the analysis is motivation with a reasonable expectation of success. There is no prima facie obviousness where the prior art itself provides no apparent basis for concluding that a person of ordinary skill in the art would be motivated to modify the prior art structure so as to arrive at the claimed structure with a reasonable expectation of success in achieving the advantages of the claimed apparatus. The requisite motivation is clearly not present in this case.

The present invention is directed to a crack-resistant paper or board comprising a cellulose fiber network web impregnated with a polymer. The polymer is impregnated into the web in geometrical formations as for example thin rectangular stiper, equi-distant circles or diamond-shape formations. (See claims 1 and 3). Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the

application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control. This invention and the advantages attendant there to are not taught or suggested by the cited references.

Terasawa, et. al discloses a decay resistant paper partly containing decayable portions. Treating the paper with an N-substituted derivative of urea over the entire surface of the paper makes the paper. The derivative is known to react with hydroxyl groups in cellulose by heating in the presence of a catalyst to form cross-links between the hydroxyl groups or methylol groups. This cross-linking hinders the groups and removes their hydrophilic character which renders the cross-linked areas resistant to action of soil microorganism (decay resistance) (See Col 3, lines 4 to 13 of Terasawa et. al.) By heating the treated paper in certain areas at a temperature sufficiently high to initiate cross-linking and in other areas at a temperature below the cross-linking initiation temperature, a paper is produced having decay resistant areas and decayable areas.

There are several basic differences between the claimed invention and the teachings of Terasawa, et. al. The primary difference is that this reference contains absolutely no teaching or suggestion of a paper or board formed from a cellulose fiber network web impregnated with a polymer material in geometrical patterns. In the absence of such a teaching or suggestion there is absolutely no motivation for one of ordinary skill in the art to make the claimed material.

In support of the rejection Examiner states:

"Terasawa disclosed decay-resistant impregnated paper cellulose made of fiber (abstract and column 2, lines 15-25) having discontinuous circular geometrical formations displayed in Figures 1 and 4 and column 12, lines 51-67, where the paper is impregnated with an antic decaying agent consisting of polymeric fiber (column 6, line 44 through column 7, line 30). Terasawa discloses 5% weight of the polymer fiber (column 9, lines 21-25). Terasawa does not disclose the

polymer is thin. Thinness is an optimizable feature, which directly affects the integrity of the paper. It would have been obvious to one of ordinary skill in the art to optimize the polymer because discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 205 USPQ 215 and see *In re Allen*, 15 USPQ 233."

Examiner misconstrues the teaching at Column 6, line 44 and Column 7, line 30 of Terasawa. In the preceding portion at Column 6, line 15 to Column 6 line 41, Terasawa et. al. clearly teaches that the "polymer fiber" is a part of the paper. For example, at Column 6, line 15 to Column 6, line 17, Terasawa, et. al. states:

"In addition, a paper made from a fiber blend composed of a natural fiber and a synthetic fiber can also be made decay resistant by the process of their invention", (emphasis added)

It is also significant to note that the synthetic polymer fiber component of the paper exist as a blend with the natural fiber. In the American Heritage Dictionary, 3rd edition, at page 148, a blend is defined as "To combine or mix so that the consistent parts are indistinguishable from one another...to form a uniform mixture" (emphasis added). This clearly differs from the present invention in which the polymer is impregnated in geometrical patterns. In fact, it appears to be exactly the opposite.

Especially good results are unexpectedly obtained when the polymer is impregnated into the web in thin rectangular stipe, equi-distant circles or diamond-shape formations as claimed in claim 3. Examiner's attention is directed to the examples at pages 5 and 6 of the application. As stated on the application, a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both the MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having superior durability in the MD direction and improved fracture toughness in the CD direction as compared for the control. There is no art of record which teaches or suggests that superior results are provided by the use of circular or rectangular patterns. Assuming, arguendo, that Examiner has established a case of *prima facie* obviousness with respect to the appealed claims, such case has clearly been rebutted

with respect to claim 3 by the experimental showing of unexpected superior properties exhibited by the circular and rectangular patterns.

In the Advisory Action Examiner states:

"Applicant argues the cited references do not teach the advantages of having a circular or rectangular geometric pattern. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., a web impregnated with a polymer in a circular geometrical patterns provided appreciably higher fracture toughness in both MD and CD direction and a web impregnated with polymer in a rectangular geometrical pattern provided a paper or paper board having a superior durability in the MD direction and improved fracture toughness in the CD direction) are not recited in the rejected claim(s)."

Examiner has misconstrued Appellants position. While the data in the examples of the application show that the invention provides one or more advantages, Appellant's primary position is that Terasawa does not teach or suggest a paper or board formed from a cellulose fiber network web impregnated with a polymer material in geometrical patterns.

In the Advisory Action Examiner also states:

"Applicant argues Terasawa does not teach a paper or board formed from a cellulose fiber network we impregnated with polymer material in geometrical pattern. Examiner respectfully disagrees because Terasawa discloses impregnated paper cellulose made of fiber (abstract and column 2, lines 15-25) having discontinuous circular geometrical formations as shown in Figures 1 and 4 and column 12, lines 51-67, where the paper is impregnated with a polymeric fiber (column 6, line 44 through column 7, line 30)."

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In view of the foregoing, Appellants respectfully request that the Board reverse the Final rejection.

Respectfully Submitted,
WADOOD HAMAD, ET. AL.

Date: June 1, 2005

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Appendix A

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6. The crack-resistant paper or board as claimed in claim 1, wherein the paper or board has a polymer material coated on a surface of the paper or board.